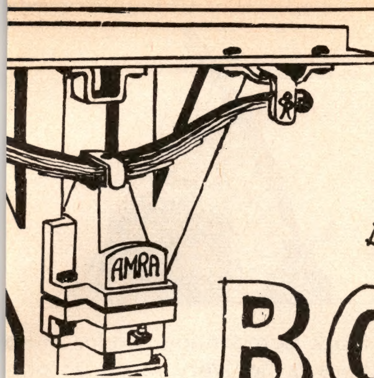

Editorial JOURNAL BOX

ARE YOU AN ARMCHAIR MODELLER?

This is a term that I ran into many years go. It describes the person who has a very een interest in model railways, likes to atend club meetings, reads all the magazines, isits layouts, talks a lot about model railways, ut somehow just never gets around to buildng one of his own.

The actual starting seems an impossible urdle to him, but, as many who are not rmchair modellers know, this hurdle is not igh at all, and in fact can be taken in norml stride if he will only stand up out of the hair himself.

There are always excuses, of course — "I aven't got the space, the time, the money, he ability", or some other darn thing, but hese are weak excuses. A kitchen table, a ew cents and the development of very simple kills will very quickly create a fascinating inerest, by building a piece of rolling stock, rack, scenery or small layout or station. Beieve me, it's well worth the effort.

So get out of that chair and get started.

ALLAN DOWEL.

COVER PHOTO: Timber trundler hauls enthusiasts over the Ongarue River New Zealand.

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The SECRETARY'S DESK

ACKNOWLEDGEMENT

In the January-February issue the balance sheet for 1965-66 was published and among the receipts was the item "Donations". This was made up as follows — A.M.R.A. N.S.W. Branch $200, G. D. Watsford $7, Australian Model Craft $5 and Anonymous $10.04 and to these generous donors we offer our grateful thanks. It is because of these people that we can have a printed Journal and still maintain the same subscription rate.

UNFINANCIAL MEMBERS

Like all organisations we are faced with the problem of those members who do not renew and we often wonder why. If you have a friend who has not renewed, please let us know his reasons.

JOURNAL PUBLISHER

With this issue Norm Robinson takes over as Journal Publisher. I have enjoyed getting our magazine under way and seeing it through its teething trouble and now, looking through the past issues, I can recall some of the many problems we faced. The staff of "The Times" have been so very co-operative and nothing has ever been too much trouble for them. It was their first venture into this type of magazine and we learned a lot together. Many a time we could not get enough material to make up the necessary number of pages and a hasty conference was held with the Editor. Now the members are rallying round and we are getting a good supply of both photographs and articles, but still the problem of suitable front cover prints is with us.

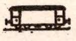
COMPETITIONS

The only competitions that seem to have any following are those connected with the Journal articles and photographs. It was very disappointing this year when there was only one entry for the Tim Dunlop Cup and one for the Rolling Stock Competition. Under these circumstances there is not very much encouragement to continue nor much satisfaction in winning. The only Tim Dunlop Cup entry was from Norm Robinson and for the Rolling Stock contest, myself.

BRANCHES

The Federal Committee has received application for the formation of new branches in London, U.K. and Blue Mountains, N.S.W. and those members responsible must be congratulated on their loyalty and keenness. May we wish them every success.

Finally I would like to express my sincere appreciation for the work that has been done and continues to be done by our Editor, Allan Dowel, who always has a cheery greeting no matter what the problem may be. His willingness and co-operation in all matters connected with Journal deserves and receives our warmest thanks.



WHAT'S NEW?

CORRUGATED IRON

Some building material supply stores and hardware stores are now supplying adhesive-backed aluminium foil tape about ¾" wide in several patterns.

There are two patterns of interest to us. One has corrugations across its width. Slices of this simulate corrugated sheeting. The other has a fine diamond pattern which looks just like steel plate which is treated with the diamond anti-slip pattern.

There is no excuse now for not putting the prototypical corrugated iron roof on those buildings.

The Midland Railway

by Brian Rowling

The Midland Railway is visualised as being ie country end of a large railway system, lverton being a terminal station in a big rosperous country town with a small subrban area nearby. This is to justify the presnce of both large and small motive power, a amline and industrial area, and a small 2-car esel set for suburban services.

The railway is "0" gauge, uses stud conct, 24V D.C., "double battery" with polarity eversing. The associated tramline uses overead wire, 12V D.C.

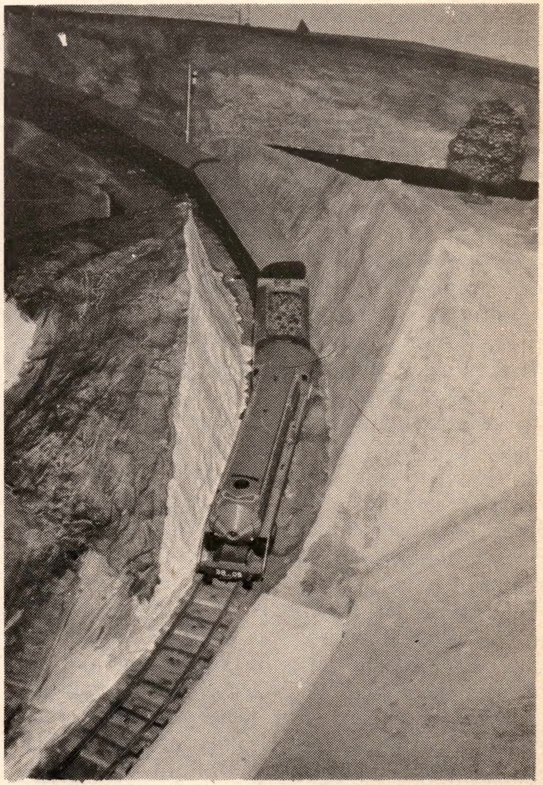
The tramline is visualised as providing assenger services between Valley Station, alley shops, the nearby industrial area (via reet running) and to the residential area ong reserve track as a kind of interurban ne. (This latter extension has been built since y last tramline article in "Journal"). You can ee we encourage people to use our efficient il services and leave their cars at home!

Motive Power: 3805 is a scale model of ie N.S.W.G.R. Pacific type of the same numer. It was built using an "O-gauge House" oiler, cab castings and wheels, an "Eicor" lisposals) motor in the tender, driving rough an O-gauge House worm gear on to ie six coupled wheels via a flexible drive. ne motor has a flywheel. All small fittings nd the tender were home-made. The louvres the air intakes at the front of the skyline asing of the 38 presented a problem which as eventually overcome by cutting out the r intakes with an "Abrafile", cutting indivlual louvres from clock spring (straightened ut), and slots in the sides of the intakes using ground-down hacksaw blade and fitting the uvres into the slots with Araldite. (I have nce found out that PVA glue would do inead of Araldite). The result looks quite realtic. The color scheme is green with cream ning.

No. 37 is a pre-war Japanese 2-6-0 with home-made tender. This was bought many ears ago as a partial wreck, having come to rief in a shop window display. The loco was ebuilt by my father, but is now mainly just part of the scenery, having had so much use that one set of driving wheels was worn right down to the spokes, along with umpteen sets of gears!

Another thing that bars it from regular use is the fact that it has just two speeds — stop, and go like he. . ! Much speed, no power! It has spur gearing with gear teeth cut into the flange of the driving wheels on one side (toothed flanges). Apart from these bad points, the body is good and simply dripping with detail! Color is black.

No. 7 is a B. and O. dockside 0-4-0 Saddletank shunter from Model Dockyard, painted green with black smokebox. It is used in Silverton yards.



No. 3805 in a cutting in the "unfinished mountains".

No. 1 is a 2-6-2 Plantation side tank loco also from Model Dockyard and its color scheme is blue with black smokebox and red lining. It is used on pick-up goods, mixed and quarry trains.

No 5 is a box-cab electric, modelled from drawings of a loco proposed for the "Great Indian Peninsula Railway" in pre-war days. The drawings took my fancy as it was a 2-6-2 (or should we say A-C-A?) with jack shaft drive and side rods — as near to a steam loco as an electric can get! It was scratchbuilt except for pantographs, motor and gears.

The motor is a disposals "Bendix" and drives the coupled wheels through a 45:1 gear reduction, giving a speed of 40 scale m.p.h., and capable of pulling ANYTHING! Color is Tuscan red with white lining and grey roof.

No. 25 is a model of an Alco streamlined American freight loco, Bo Bo type scratchbuilt from tinplate and brass except for a nose casting and a Westinghouse motor from O-gauge House. This is the best performer on the system so gets the lion's share of the work. Color is royal blue and yellow.

7920 is a model of N.S.W.G.R's Budd Caterpillar-G.E. Bo-Bo diesel electric shunter of the same number. Its performance is rather poor — its motor being a worn out windscreen wiper motor. I made this loco when I was a young apprentice and knew next to nought about model making. The body, however, is fair enough — so this loco, too, is mainly scenery. Color is Tuscan red like its prototype.

The two-car diesel set is entirely "N.K.P" (**N**o **K**nown **P**rototype). It is streamlined at each end (streamlining was copied from the Denver Zephyr). The motor is Westinghouse with flywheel and O-gauge House gearing, otherwise scratchbuilt. It is an admirable performer and sees much use. Color is Tuscan red and cream, silver roof with grey roof radiators.

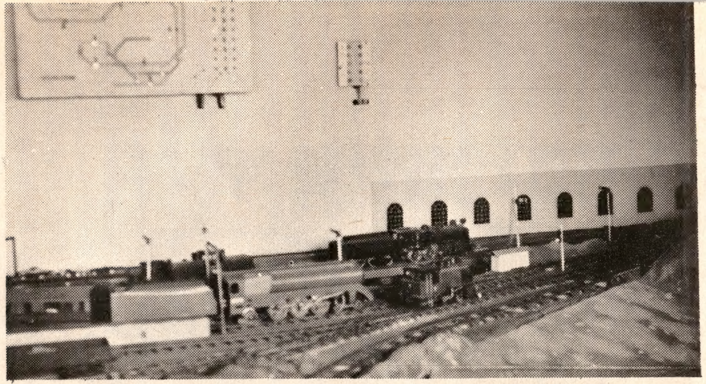
The fitting of flywheels to 3805, No. 25 and the two-car diesel has worked wonders, giving beautifully smooth starts and stops with the increased "momentum". This makes its presence known, too, when a driver has not been watching his signals properly and finds his train "flat out" and about 4' from a "stop" signal. The only way to stop is to throw the reverse switch and hope the overload relay holds! He **may** stop in time!

The tram is a close-to-scale model of a Sydney R1 Class corridor car and is powered by a HO motor mounted on the motor bogie. It is scratchbuilt from tinplate, with a wooden roof. Current is collected from overhead wire by trolley pole. Color is green and cream.

Passenger rolling stock consists of a five-car set, scratchbuilt except for B.P.R. bogies and is based on the N.S.W.G.R. Silver City Comet cars, which they resemble except for the skirting below the floor level, which I made lower and more streamlined looking. These cars are blue and yellow and match up with loco 25 to make the "prestige train" of the system.

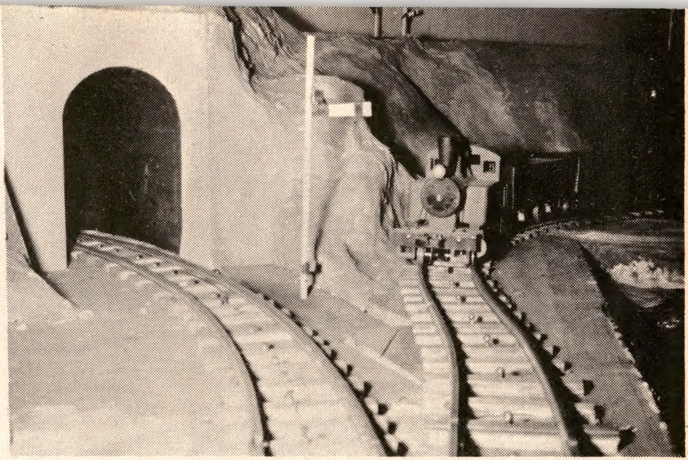
In addition, there is a six-car set built from C.C.W. kits and O-gauge House bogies. After about three years of service, these cars began to fall apart (not at my joints but at C.C.W's) where the window-dividing panels had been joined. I do not know what glue they used, but it didn't stick! The trouble was overcome by coating the insides of the sides with PVA glue and sticking 1/16" perspex sheet over the whole area.

Freelance Alco diesel No. 25 in the "unfinished hills".

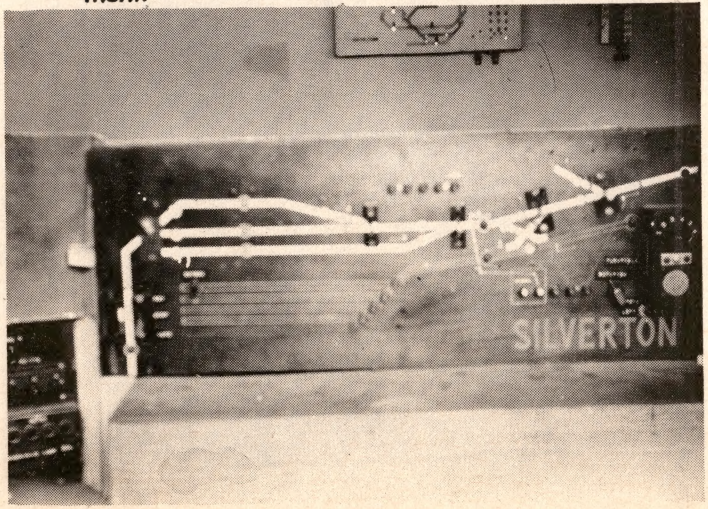


Near Silverton, showing No. 7, 3805, No. 37 and 7920. Building still has sides to be drawn in.

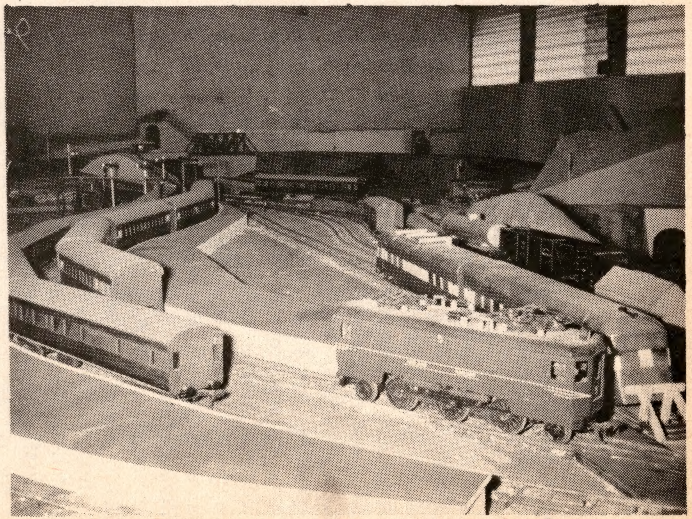
Large wall panel is illuminated track diagram. Small panel indicates turntable alignment.



Old No. 1 leaves the quarry branch to join the main line. Signal is a 3-position upper quadrant, oil damped.



Silverton box and turntable control. Part of Cab No. 2 on the left.



General view of terminal. Box-cab electric No. 5 in foreground.

Goods stock consists of a variety: some scratchbuilt, some given by friends, some kit-built and some lionel. Under construction at present is a 40′ bogie tank car. The tank is being made of sheet steel, the ends are from large Pressure Pak flyspray cans and the dome atop the tank is from a small Pressure Pak can, all duly soldered together and trimmed and filed. Small fittings for the dome, etc., are being fabricated from brass and tinplate and Japanese Bettendorf bogies are fitted. All is ready now for painting.

Scenery is still under construction, but I find plaster on flyscreen-wire a satisfying medium, colored when dry by using tinted PVA interior house paint. For a backdrop, I had a go at "art" with PVA paint and pastel colors; and while I am no artist, the result is infinitely better than a blank wall!

The beauty of PVA is that if you don't like the result of your creation, it is dry after an hour and you can have another go!

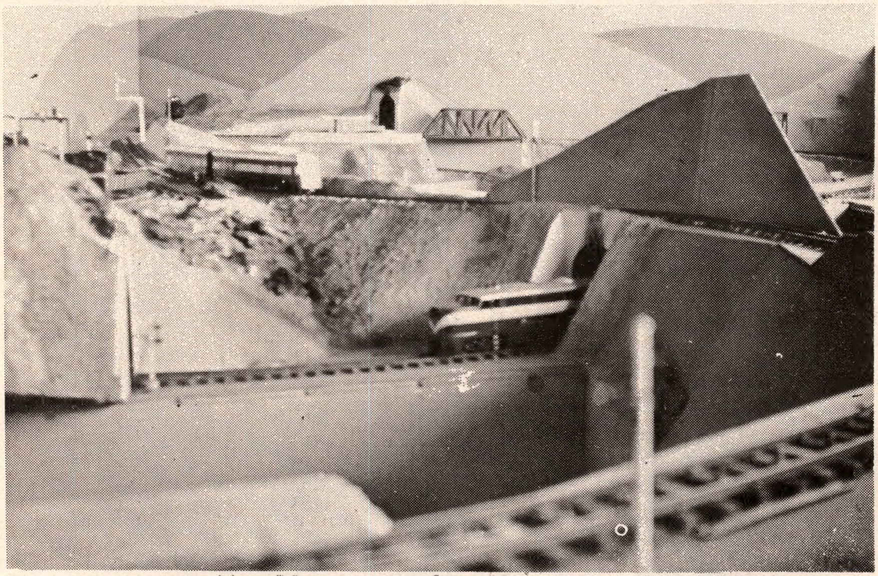
I sketched the scene on the wall lightly in pencil first, then painted later. The pastels (used for distant trees, fences, etc.) seem to be standing up well. The scene depicts rolling hills with farmlands and in the distance, snow-capped peaks.

I am at present trying to build a mode house. I have found that PVA glue sticks well to glass, so I am making the whole walls of glass sheet and painting over the whole, except where there are windows.

The results so far seem promising. I may try a block of home units next! The method seems good where there are lots of windows.

The main line is, in effect, double track from Silverton to Central Tunnel, where the line is imagined to continue to Big City. Between Cliffside and Valley is a deviation to ease the facing grade. Even now, 1 in 30 uncompensated is the order of the day with 4-feet radius curves. You may note that it is necessary for all trains leaving or arriving at the quarry or industrial sidings to be bound for Silverton, as there is no connection to the other track. This is overcome by using the reversing loop on the "other side" of Central Tunnel. Also on this reversing loop is the imaginary station "Endsville", the terminal for suburban services.

The Green Hills branch is actually a dead end behind the backdrop and is served exclusively by the 2-car diesel train, which is kept out of sight long enough to represent a trip to Green Hills and back to Silverton.



No. 25 emerges from Short Tunnel. 2-car diesel unit and East Tunnel in the rear.

Retaining wall above No. 25 camouflages Cab No. 2.

The 2-car diesel train also provides the all stations service: Silverton, Cliffside, Valley and to the imaginary Endsville where it stays for a while. Loco-hauled trains do not stop at Cliffside or Valley: they continue straight into Central tunnel on their trip to the "Big City".

CONTROL:

There are two cabs and a signal box provided. The signal box works all signals and points in Silverton yard limits (nine signals and twelve points). Either of the two cabs can control a train anywhere on the layout, which is divided into ten electrical sections on the main line plus one section for each siding, each branch and each platform.

Each section on the main line is connected to a contact on a telephone uniselector for each cab. When a train starts off from Silverton, its driver (say Cab 1.) presses a key and the uniselector switches on section one. As the train enters section two, the uniselector automatically switches on section two and off section one. (It is not necessary to press the key again). And so on right around the layout. An automatic signal is provided at the entrance to each section, so as soon as a train clears section one, the signal clears and Cab 2 can start a second train and follow the first, and so long as signals are obeyed, the two trains can run on the same tracks quite independently. I purposely avoided putting "train stops" contacts on the signals to cut off power when the signal is at stop as I feel that part of the joys of operating are lost if it is not necessary to watch for signals.

Automatic signals are of the colour light type where the indication can be seen from the cabs. Indications are red, stop; yellow or green over red, caution, next signal at stop; green, clear. Where the front of a signal cannot be seen from a cab, three-position upper quadrant signals are provided. These have two operating coils and oil-filled dashpots underneath for slow action.

MANUAL SIGNALS

All signals in Silverton yard limits are modelled on N.S.W.G.R. lower quadrant wire worked mechanical signals, but are actually operated electrically by a relay below the baseboard. A bush-button clears these signals and as the train passes, the signal returns to stop. A limited interlocking prevents most wrong signals being inadvertently cleared. If one does manage to clear the wrong signal, it can be restored to stop by pressing a cancel button.

On each cab, a small auxiliary panel is provided to change the automatic signals at sidings on the main line to manual, for shunting movements, the driver concerned being responsible for the subsequent restoration to automatic.

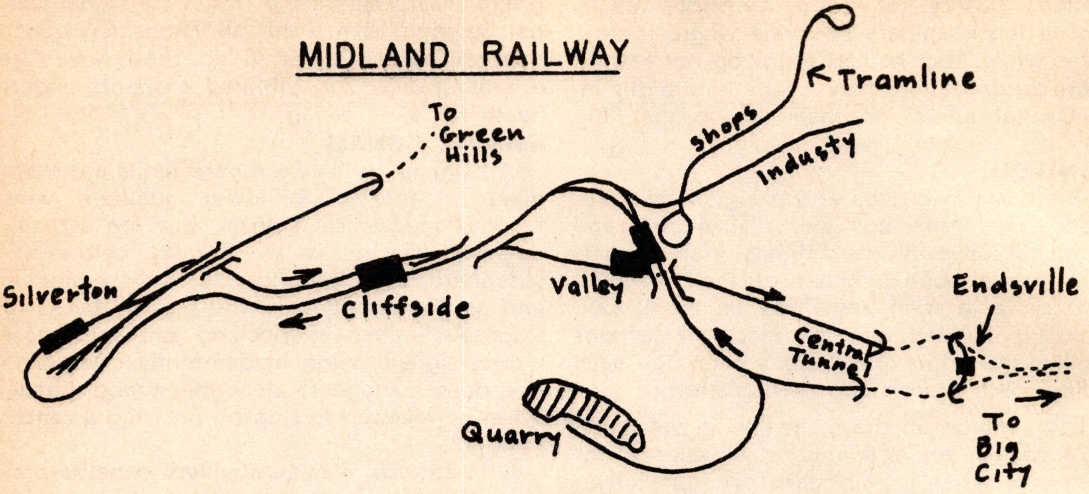
Most rolling stock and all locos are fitted with automatic couplers, and uncouplers are fitted at convenient locations.

The train can be either driven or set to run automatically, depending on the "staff situation". If on auto., it stops at each tram stop for twenty seconds by the action of a thermal timer. Whether auto, or manual, the tram stops for the train at the level crossing, using the device which I previously described in Journal.

Well, that is the Midland Railway to date, which, like most model railways is never finished, but always complete! — I think that is the main reason for the popularity of the hobby.

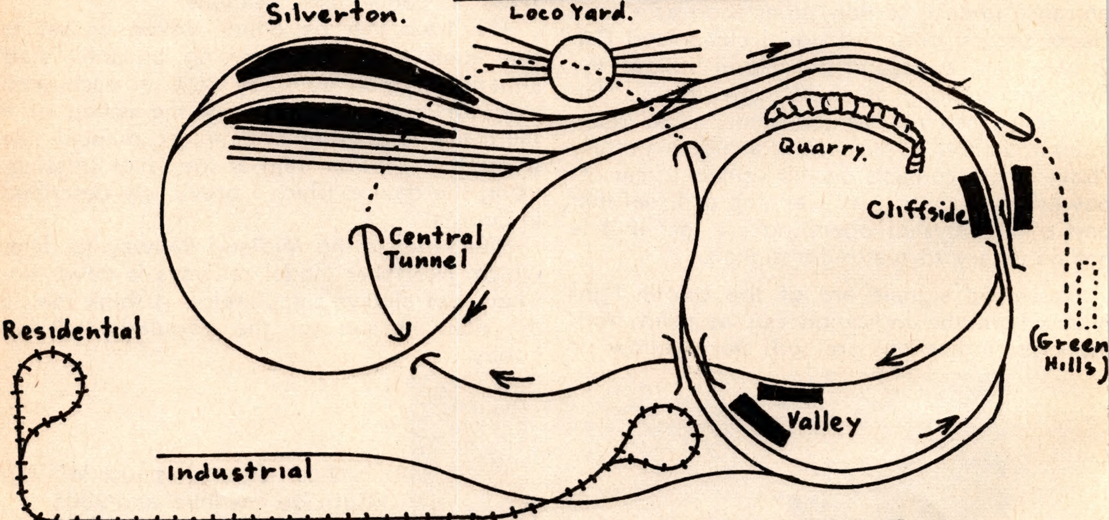
2-car diesel has just left Cliffside low level and 3805 thunders overhead. Cliffside "up" platform is on the left. East Tunnel in background.

MIDLAND RAILWAY



MAP OF THE SYSTEM

MIDLAND RAILWAY



PLAN OF THE LAYOUT

How We Built The M. M. R.

PART 4
(by A. Dowel)

AFE WORKING

Safe-working is introduced into many large nodel railways for prototype interest, rather nan for safety reasons. However, on the \.M.R., you can be quite sure that safe-workng is definitely required; at least sufficient afe-working equipment and practice is necssary to avoid so-called "cornfield meets".

You will recall from the first article in this eries that the four scale miles of the M.M.R. re basically folded into a spiral, with the nain line running around the outside edge f the room nearly three times. Separation beween these loops is achieved by level variaon, but this means quite a few tunnels, some airly long. Obviously, we must protect aginst head-on and rear-on collisions in these reas.

You will also recall that the M.M.R. is a ive-station single-line branch railway, so our nain safe-working areas are the four singleine blocks between stations. Each of these locks traverses three sides of the layout, abut 60' between stations (approximately one cale mile).

We have fitted at the ends of each block ection, an advanced starter signal, protectng against entry into the block, and an outer nome signal protecting against entry into the tation area.

The outer home is completely under the ontrol of the local signal box, but the advanced starter requires the co-operation of ignalmen at either end of the block before it an be pulled to "off". The main purpose in his article is to explain the components, wirng and operation of this foolproof (we hope) ystem.

THE CIRCUIT AND COMPONENTS

Reference to the circuit in Figure 1 will give details of the electrical operation and hows the requirements of the various comonents.

On the left, we have signal box "A" (part of the control panel), which has a BLOCK SWITCH (a 3-position home-made single-pole switch), a PERMISSION KEY, which is a miniature telegraph key, and a signal lever which in this case operates a switch instead of mechanically operating the signal arm. Just on the right of this, we have a lot of relay symbols.

The $\frac{A}{4}$ indicates that we have a relay named "A" with a 100-ohm coil winding and 4 contact units, numbered A1 to A4, which are all around that area. Relay A, in addition to operating contacts A1 to A4, mechanically operates the signal arm "A" R1 and R2 are two resistors.

The equipment is exactly duplicated at signalbox "B", but the relay is not shown to maintain simplicity. In addition to this equipment, each signalbox has a simple two-way telegraph and bell to adjacent stations.

OPERATION

Let's assume that signalman A wishes to send a train DOWN to B.

He calls the attention (ding) of the B signalman. Signalman B acknowledges (ding).

He then asks signalmen B for permission to send a fast passenger train down (4 dings).

Signalman B acknowledges (4 dings).

Signalman B switches his BLOCK SWITCH to TRAIN COMING FROM, and presses the PERMISSION KEY.

Signalman A switches his BLOCK SWITCH to TRAIN GOING TO, and pulls off the advanced starter lever. Then, and only then, relay A will operate and mechanically pull the signal to OFF.

When the signal has operated, the relay contact A4 will light the SIGNAL DETECTOR lamp at signalbox B, indicating to the signalman that he can now release the PERMISSION KEY.

The circuit for relay A is from earth behind the PERMISSION KEY "B", via that key operated, through the BLOCK SWITCH "B" in the TRAIN COMING FROM position, over the line wire to BLOCK SWITCH "A" in the TRAIN GOING TO position, through the SIGNAL

LEVER OFF contacts to the relay coil which is connected to – battery via resistor R1. Thus, the relay "A" operates and at contact A1 locks itself in the operating position. Contacts A2 and A3 play no part at this stage.

When the PERMISSION KEY at the start of the above circuit is released, the current through relay "A" coil is reduced because it now gets an earth from resistor R2. However, there is still enough current to hold the relay, but in this condition, it is ready to release quickly.

The block is all set now for safe passage of the train from A to B. As it passes into the block, the wheels on one rail short circuit the gap at X in Figure 1. This connects track power of + polarity (the opposite to that behind the relay) to point Z (under the relay) and the relay quickly releases, restoring the signal to normal. Track power is switched on to the "signal restore" rail by contact A2 before the loco's second "pick-up" wheel has left the rail before the gap.

The signalman can now restore the signal lever, which has no effect. He also sends TRAIN DEPARTURE (Ding, Ding) on the telegraph which is acknowledged by B.

When the train arrives at B, the signalman there sends TRAIN ARRIVAL (3 dings) which is acknowledged by A, and then both restore their block switches to the centre position. A new cycle can now commence from either end.

The signal may, of course, be restored at any time simply by the signalman restoring the lever arm. Contact A3 opens the release circuit after the relay has released.

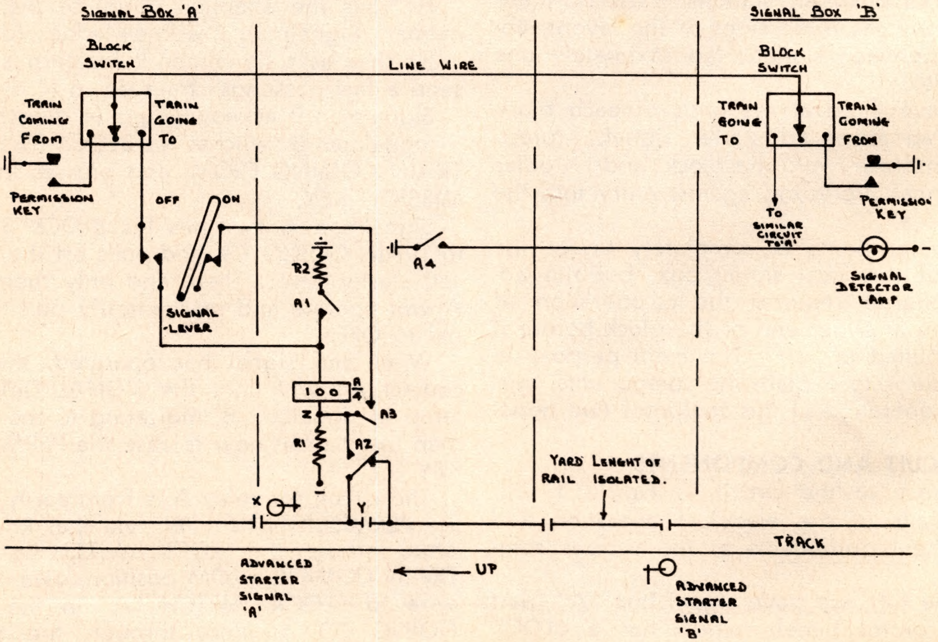
You will see that the signalman cannot possibly pull an advanced starter signal to "off" without the co-operation of the distant signalman. To set up signals for another train before TRAIN ARRIVAL, both would have to ignore the fact that the block switches were in the wrong position, which would be most unlikely.

COMPONENT VALUES

The relay used was the popular 200-200-570 type. We wired the two 200 coils in parallel to give 100 ohms. A six-inch extension wire soldered to the armature pulls the signal arm.

Resistor R1 is 22 ohms and R2 is 165 ohms. Neither of these figures is critical, and both resistors can be one watt radio type.

The circuit has proved to be very reliable and simple to operate, and gives adequate safe-working on the single-line blocks.



"Hildenhurst"

Part 1 **D. M. Hodges**

This layout, based loosely on "Charford" which has been featured occasionally in the "Railway Modeller", was designed with the following advantages in mind —

1. Complete portability and to be demountable for shipping purposes, as I travel a good deal in connection with my job. How this was achieved will be described in a subsequent article.
2. Platform capacity to accommodate three-coach trains.
3. Loco facilities to be adequate for six locos, incorporating the inexpensive and efficient "Triang" turntable.
4. Radii to be 3 feet minimum.
5. Only seven points to be utilised, all with live frogs.
6. To be capable of construction within six months, my period of stay in Australia.
7. Suitable for incorporation into a permanent layout as, and when, the occasion arises.

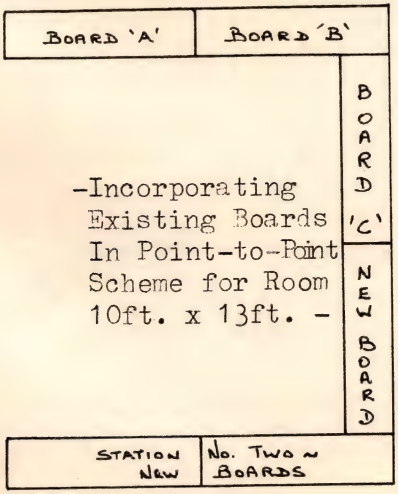
These were achieved as follows —

1. Designing around a module of 5' x 18" which is not too cumbersome, can be transported by (large) car, and is accessible from the front at an optimum height of 3 feet.
2. The design had to take into account existing buildings at present stored in U.K., but the opportunity was taken to build new and longer platforms and canopies.
3. Most published schemes tend to postulate a diameter of 12" for a turntable; the "Triang" is a full 16" overall, and this was taken into account by fitting it into a corner "the wrong way round".
4. Self explanatory.
5. Self explanatory.
6. By planning ahead by means of a simple bar-chart as shown, I firmly believe that construction time can at least be halved, probably more so in the case of larger club layouts.

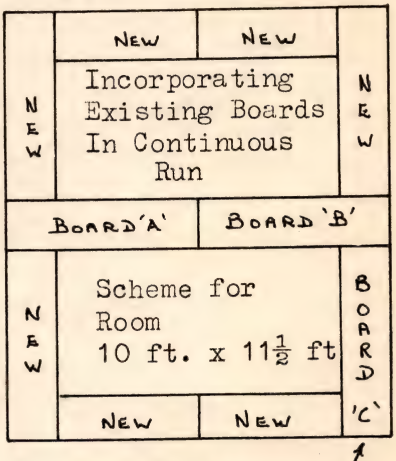
There is a sense of achievement in keeping to schedule, and a spur in trying to beat the target. A glance at the bar-chart given, shows that two weeks ahead of actual installation, planning begins, and a week ahead, purchasing.

As an example, take the question of point-motors under "300".

Usually they are bought singly, toyed with, tried out and eventually installed over a period of weeks. Under this scheme during "planning" different makes and their advantages



-Incorporating Existing Boards In Point-to-Point Scheme for Room 10ft. x 13ft. -



Incorporating Existing Boards In Continuous Run

Scheme for Room 10 ft. x 11½ ft

Gradient in Looped Track

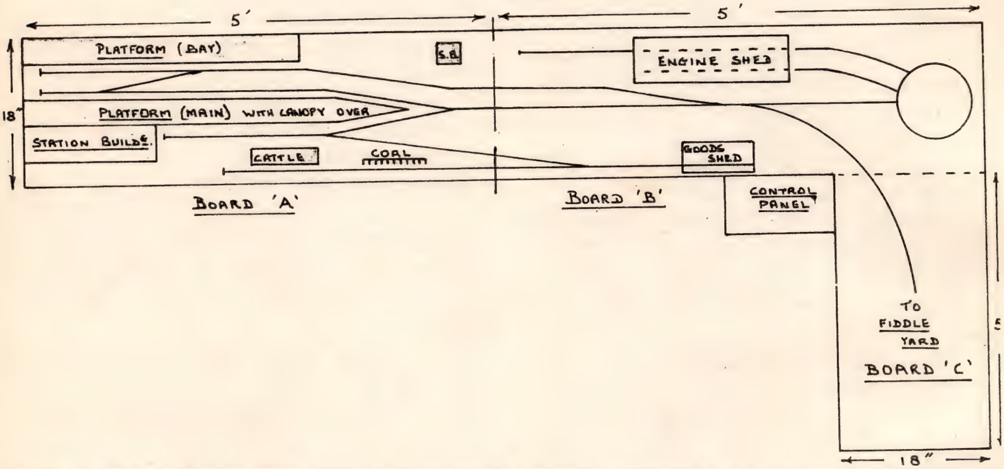
(additional contacts, cost, etc.) are compared, perhaps by reference to other layouts. During the ensuing week all seven are bought, and finally all installed in one evening. Finish.

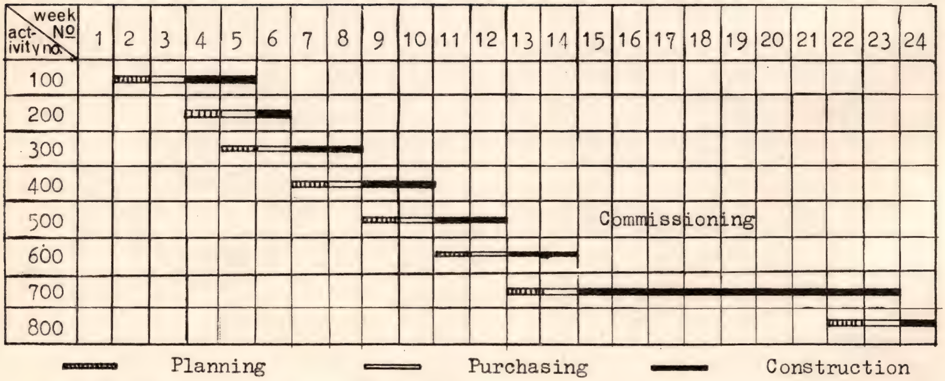
In my own case I weighted each activity and drew a curve to cover the duration of the project, but this is an added sophistication and is not strictly necessary.

7. I have given two proposals of how the completed boards can be incorporated into a permanent layout in a small bedroom or boxroom. Many other schemes will undoubtedly occur to other enthusiasts, and I feel that the feasibility of incorporating finished work into a larger layout should always be borne in mind.

I hope to give constructional details, including the wiring diagram and control panel layout, in a later article; also, some idea of how complete demountability was achieved. But there is nothing to stop the keen modeller from making a start at once! The drawing is "as built', not projected, and can be "scaled off" with confidence.

Should you have any queries, or wish to view the layout, which is situated in West Ryde, N.S.W., I can always be contacted via **the Editor**.





100	BASEBOARDS	Cutting, Framing and Joining.
200	SETTING OUT	and Fastening of Underlay.
300	TRACKWORK	Laying of Track and Points, Setting Ballast, Painting Rail etc
400	LOCO FACILITIES	Installation of Turntable, Inspection Pits, Shed Roads etc.
500	WIRING	Connection of leads, bonding etc.
600	CONTROL PANEL	Including wiring-up.
700	BUILDINGS	Both scratch and kit built.
800	SCENERY	Also 'finishing touches'.

Branch Notes

N.S.W. BRANCH

The N.S.W. Branch held a Christmas get-together on December 17 last at Kurnell. The gathering took the place of our Christmas meeting and was in the form of a Family Picnic. Quite a few family groups turned up, but not as many as we had hoped. However, December is a very full month for everyone, particularly those of our members who had layout commitments.

January was not well attended for the same reason no doubt, but the layout was operating and those who did attend had a very enjoyable afternoon.

Some discussion took place regarding the Tender requirements of the N.S.W. Railways in respect to the Dulwich Hill land; members will be pleased to know that the Management Committee will lodge a suitable tender by February 22, 1967. So by the time you read this, the N.S.W. Branch may know if it has a permanent home or not.

Our congratulations to Bob Smith for his winning entry in the Lineside Competition — a beautiful example of a Victorian Coaling Stage — in fact, we have an idea that the original featured on the cover of Journal for November-December, 1966. Congrats again Bob. It was very good to have a Vic. entry, especially such a winner as yours.

Rup Ackland.

QUEENSLAND BRANCH

Work on the new HO layout seems to have slowed down but a good turn-up of willing members should see it running very soon, so come along prepared to work.

Work has been going on rebuilding the Sn3½ layout. The new theme of this layout is to be a suburban area and it will include an S gauge Standard Gauge track and a 3'6" to 4'8½" gauge bogie exchange depot. (The first in Australia!).

We were very pleased to see Doc. Suggitt's new S gauge model of a B.R. Deltic Diesel loco at the December meeting. The model is the best he has produced yet and is a very smooth performer.

Arthur Robinson, Ass. Sec.

SOUTH GIPPSLAND MODEL RAILWAY CLUB

The S.G.M.R.C. is now active again after the Christmas recess. A great deal of maintenance has been done already, but more is required before trains can run successfully.

Our main meeting night is the second Wednesday every month. Visitors are welcome, but I advise any intending visitors to contact me, N. ROBINSON, 39 Bena road, Korumburra, phone 109, prior to your visit to avoid disappointment, as the club layout is really Cedric Rolfe's private one, which he has very kindly allowed the club to use.

Last Wednesday night four club members accepted the invitation of Mr. A. Kells to visit his "Live Steam" layout on his property at Jumbunna. There are now four very envious club members in the district.

As fire restrictions prevent Adrian firing up the beautiful 6¼" gauge South African General, he did the next best thing, he took us on a walking tour of the section that is completed, and pointed out to us the extensions to be made in the near future. Adrian and his friend are to be commended on their efforts in such a short length of time. It is their aim to have three Locos under steam on the system eventually.

Before leaving we were able to arrange for another visit at a later date, when the fire restrictions are lifted and our ambitions can be fulfilled to the utmost — a ride behind the General with steam and smoke in our faces and the smell of hot oil in our nostrils.

N. Robinson, Secretary S.G.M.R.C.

COMPETITION RESULTS

NOVEMBER/DECEMBER JOURNAL

BEST ARTICLE: "We Add a Tram Service", by Brian Rowling.

BEST PHOTO: Tram on Rail Crossing (page 19) Brian Rowling.

Congratulations, Brian, on a clean sweep in this issue.

ELECTRICLINIC

NO. 3 — RELAYS

Members who are not familiar with relays will derive great pleasure from the installation of simple relay circuits, some of which are detailed in this article. For the more advanced, the addition of certain more complicated relay circuits will really create fascinating interest. Track circuits, sections of main line with automatic signalling, interlocking of points, signals and track circuits are but a few.

THE 3000 TYPE RELAY

Throughout this article, reference will be made only to the British Post Office 3000 type relay, which was until quite recently, the standard relay of the main Australian user, the Australian Post Office. Because of A.P.O. use, this relay was also the main relay used for the Australian armed services and it therefore follows that 3000 type relays account for about 95 per cent of relays available to modellers in Australia through secondhand dealers and disposals stores.

CONSTRUCTION

Most relays are made up from four main components —

1. Coil Assembly.
2. Yoke.
3. Armature.
4. Spring Assemblies.

These are shown in Figure 1.

The coil mounts inside the two sides of the yoke, being fixed with one coil nut.

The armature pivots freely on the knife edge at the end of the yoke.

The spring assemblies are screwed to the top of the yoke, with one end over the armature.

PRINCIPAL OF OPERATION

It is well known that when an electrical current flows along a wire, a magnetic field is set up around the wire. If the wire is concentrated into a small area, the magnetic field is likewise concentrated. If the concentration is in the form of windings around an iron "core" (or rod) a very powerful magnetic field is created, or we can say that we have made an electro magnet. The magnetic field can be concentrated into a small area by providing a path of low "reluctance" for the magnetic "lines of force" in the form of a complete magnetic path of soft iron. This path is a combination of coil core, yoke and armature. The magnetic field is concentrated into the small air gap between the core face and the armature face in such a way that when current is switched on to the coil, the armature is powerfully attracted to the coil. In moving towards the coil, the armature in turn moves the spring assemblies, provided of course that the pressure of the spring assemblies does not exceed the magnetic force applied to the armature. (See Figure 2).

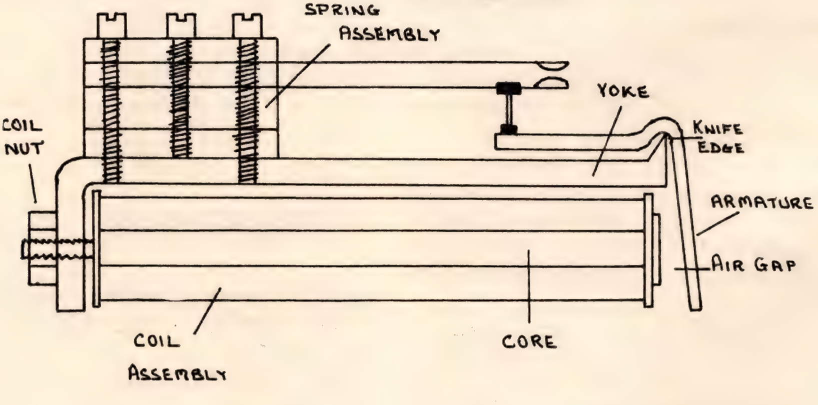


FIG. 1 CONSTRUCTION

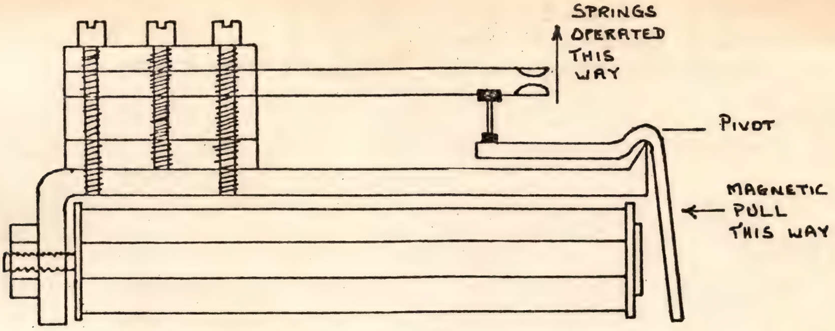


FIG. 2. OPERATION

SYMBOLS

The symbols shown in Figures 3 and 4 will cover most model railway applications, and should be used on all circuit drawings.

Relays are generally numbered with a capi-al letter, A, B, C, etc. Sometimes, two letters are used to indicate the function. Thus, relay "TS" would be "TRAIN STOP", etc.

Coil assemblies come in the four main types shown in Figure 3. The great majority of re-ays are "plain". Whilst the second and third types slow acting and slow releasing, are ex-ensively used in telephone switching circuits, the delays are not usually significant in model applications. For example, a very large (1½" long) heel end slug under closely controlled conditions may give a release time delay of 500 milli-seconds or half a second. Except in "flasher" circuits, we have little use for such delays.

The fourth kind, with two windings, has a few applications which will be mentioned la-er in this article.

All coil assembles are made to the same mounting dimensions, and are therefore in-erchangeable in different yokes.

Coil assemblies are numbered by looking at the coil terminals (rear end). With the springs uppermost, number from left to right using lower case letters, a, b, c, d and e. If the coil assembly has only one winding, it will be connected to a and e. If it has two, they will be connected to a and b, and d and e, respectively.

Thus the symbol TSe indicates the terminal of the coil assembly of relay number TS.

Spring Assemblies come in thousands of

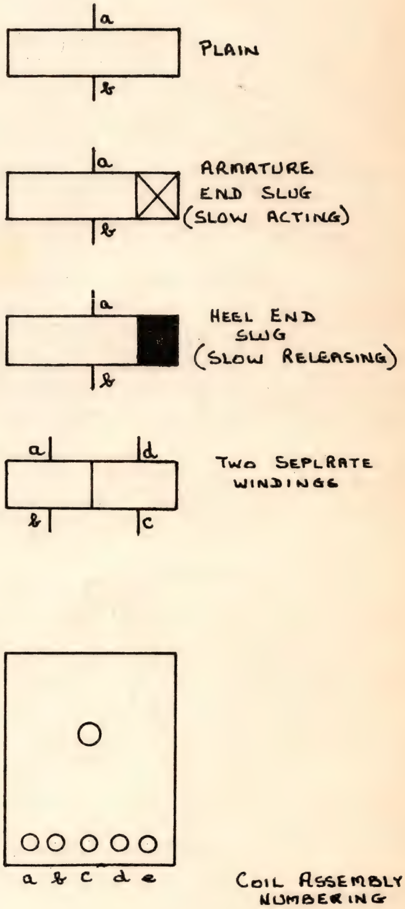


FIG. 3 CIRCUIT SYMBOLS COIL ASSEMBLIES

different combinations, but each is based on four "contact unit" types, as shown in Figure 4. As there are usually two spring assemblies on a relay, and each relay can have up to four contact units, it is not difficult to imagine how the large number of combinations can occur.

As we can seldom get relays to order, we must be prepared to do some coil swapping and spring assembly re-arrangements sometimes, to get what we want. However, many alternatives are available, as we shall see later.

The spring assemblies are usually shown in circuit diagrams in the unoperated condition. Thus a "make" contact unit is shown with the contacts not touching, but when the relay "operates", the contacts of a "make" unit touch together.

Combinations of various contact units are listed counting from the armature. Thus a spring assembly listed as MMC (or 2MC) would be one comprising three contact units, two makes followed by a changeover on the outside (see Figure 5).

Spring assemblies are numbered by looking at the front of the relay (armature end) with the springs uppermost. (See Figure 4).

As the maximum number of springs is nine, all springs fall within the range 1 to 9 or 21 to 29, counting in each case from the yoke up.

ADJUSTMENTS

Relays as they come from the factory are already adjusted. Adjustment is a highly skilled operation. However, as model railway circuits are not usually critical, a little common sense and an understanding of the following will allow the average modeller to repair damage to springsets due to rough handling usually associated with disposal suppliers and to slightly re-adjust after a coil assembly replacement or spring assembly re-arrangement.

Armature travel must be checked first, as

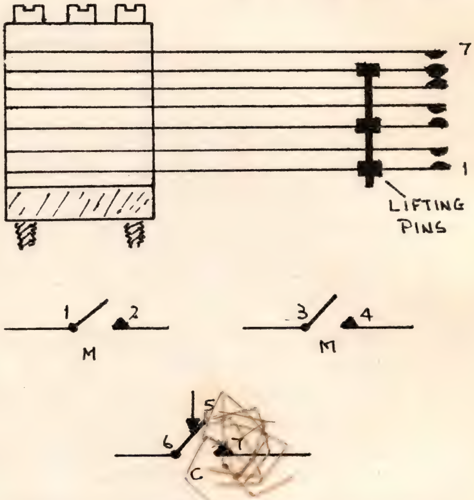
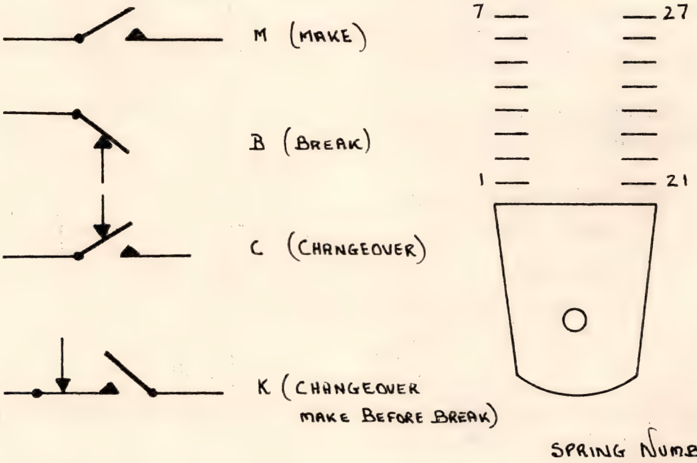


FIG. 5 MMC SPRING ASSEMBLY



SPRING NUMBERING

FIG. 4. CIRCUIT SYMBOLS

CONTACT UNITS OF SPRING ASSEMBLIES

ther adjustments depend on this. The usual travel, measured between the core face and he small stud or screw in the centre of the rmature is 31 mils (thousandths of an inch). It is not necessary to touch this if the springs re making and breaking satisfactorily when he armature is operated by hand. Check this making and breaking against a white background. If the armature must be adjusted, use eeler gauges and bend the armature angle by hand after removal from the yoke. (Remove the small retaining screw in the pivot). Trial and error will soon set the correct gap.

Springs are divided into two main types, namely "lever" springs and "buffer" springs. The former are the ones moved by the armaure. The latter are the ones which have an extra lug on the side which rests on to the edges of the "buffer block", the white plasic block which is screwed to the yoke between he springsets. To be reliable, springs must not only touch, but be under tension while ouching.

"Buffer" springs should be tensioned up or down as the case may be, against the ledge of the buffer block. Thus, if the lever spring ifts the buffer spring of the block, it follows hat there must be tension when the two are ouching.

Lever springs are not critical and should be O.K. as long as they are pressing slightly down on to each other (via the lifting pins) and finally on to the armature.

After checking armature travel and spring ensions, the only other check is for "twinnng" of the pair of contacts on the spring tips. Both contact "domes" should touch simulaneously for greatest reliability.

PURCHASING RELAYS

In general, when buying relays, one should aim at getting coil assemblies suitable for 2-volt operation, which means coil windings from about 50 to 500 ohms resistance. The values are generally marked on the coil asembly wrapping. Values above this will either operate only a small springset or perhaps not operate at all on 12 volts (2000 ohm coil assemblies are designed for operation on 50 volts).

It is not usually possible to get the exact pring assemblies required, so it pays to go for the biggest you can get, which can be e-assembled. At least try for C units, which can be used as an M or B by simply ignoring the unwanted spring.

Coils can be re-wound of course, but it's much nicer to be able to get what you want.

A common relay available has two 200 ohm windings (marked 200/200 or 200/200/570). Remember that two 200 windings connected in parallel make one 100 ohm winding, ideal for 12 volts.

3000 type relays are available from about 50 cents upwards from Walthams Disposal Stores in Elizabeth Street, Melbourne, or from Top Cat Disposals, an associate of North Shore Hobbies in Sydney.

Bought new, from Lorimier Contacts in Melbourne, they cost upwards of $4 each, but can then be made exactly to order. Lorimier also make the 600 type relay (miniature version of the 3000 type) from about $3 upwards. These are adequate for simple circuits.

SOME SIMPLE CIRCUITS

1. The simplest application of a relay is where several circuits must be operated by one simple circuit, such as push-button.

Consider the circuit in Figure 6.

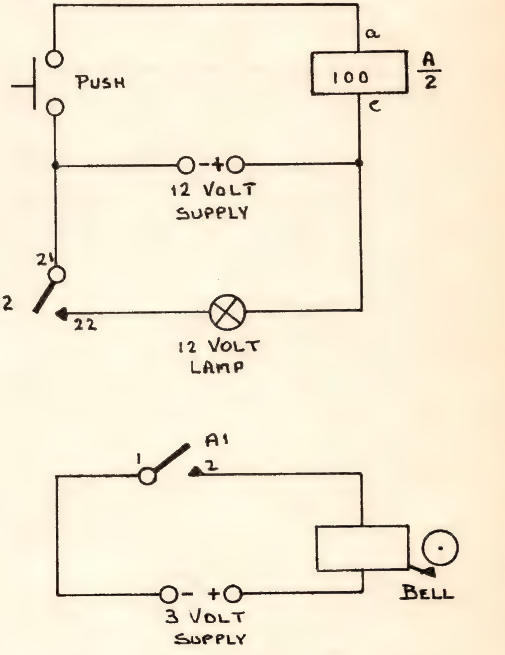


FIG. 6 RELAY DOES TWO JOBS

Relay A has two functions, denoted by the 2 under the A and bar beside the coil assembly. Connections are made to a and e on the coil.

When the PUSH is operated, 12 volt supply is connected to the coil. Contact units A1 and A2 are operated, A1 connecting 3-volt supply to a bell and A2 connecting the same 12-volt supply which operated the coil to a 12-volt lamp.

Thus two quite separate jobs were carried out by the relay. There can of course be many more than two.

2. The next use is that of storage of electrical signals. This is done with the locking circuit in Figure 7.

In this case, when the push is pressed, current flows from the 12-volt supply to operate the relay B which has three functions.

B1 short circuits the push-button so that when the push is released, the relay remains operated. This is known as locking circuit, as B virtually locks itself in an operated condition electrically.

Contact unit B3 changes the signal lamps from red to green, whilst contact unit B2 lights a 3-volt panel lamp to indicate that the signal is operated.

This is not a practical circuit of course, as it could not be released without switching off the power. In practice, a break contact, (push or relay) would be wired in series with B1 to release the circuit later.

3. Figure 8 shows some of the contacts of a chain of relays A, B, C and D which form the basis of an automatic signalling circuit. In this case, the train wheels operate the relays, the relays lock and are released later by the operation of further relays.

See whether you can follow this one.

One side of the power supply is connected to one rail of the track. As wheels bridge the gap at W, and is connected to coil A which operates, as it is connected to — Contact A1 locks A relay. Other contacts (not shown) operate signals and trip sections, thus cutting off power to following trains.

When the train reaches gap X, B relay

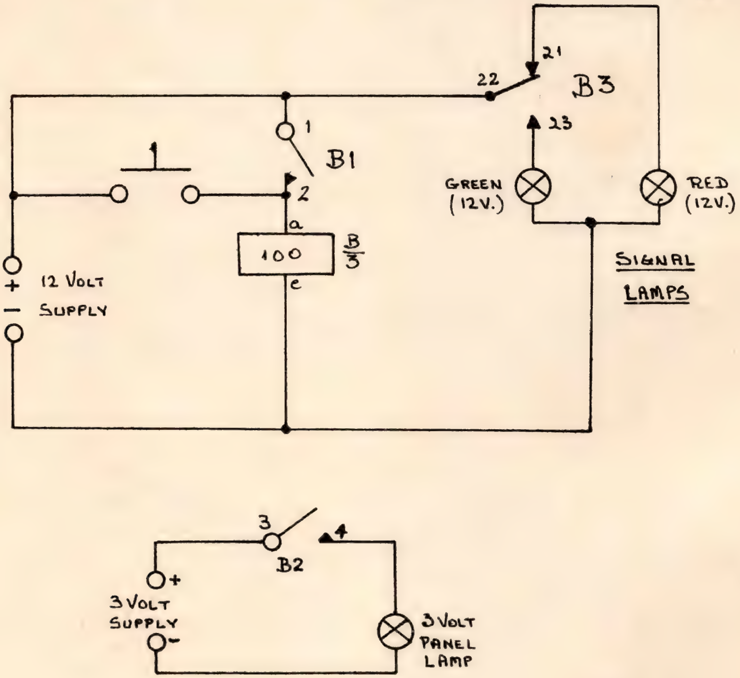


FIG. 7 RELAY LOCKS & DOES THREE JOBS.

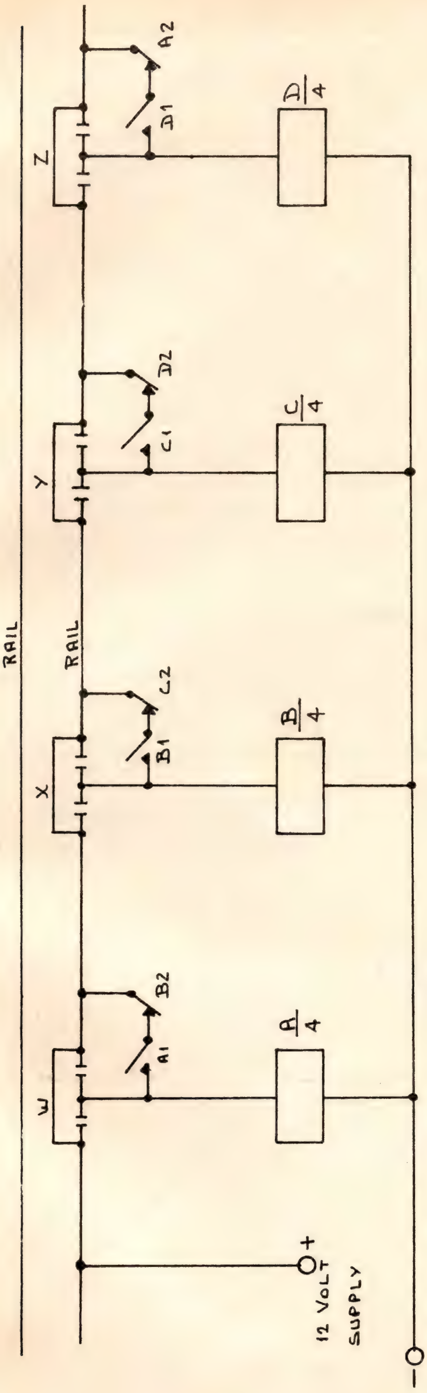


Fig. 8 Basis of an Automatic Signalling Circuit.

operates in a similar way, doing all the same things to another signal and trip section. But this time, contact B2 unlocks relay A, which restores power and the first operated signal to "proceed" again. This goes on until the full circle is traversed, when relay A, in operating a second time, releases relay D at contact A2. This is the basis of a fascinating auto circuit which can run two or more trains in a circuit for display purposes, without human intervention. This could be called a basic locking and unlocking circuit.

One could go on for volumes, drawing interesting circuits, each individually designed for a purpose. This is what makes relays so fascinating.

SIGNAL OPERATION

Many layouts require electrically operated semaphore signals. A relay is the ideal means of providing the movement for three reasons.

(a) They are cheap electromagnets.

(b) They are very efficient electromagnets, (which means that they can remain operated for long periods without overheating and use little current).

(c) Where extra contacts are required, the relay automatically provides them.

I find that the best way to use them is to solder an extension piece of heavy wire on to the relay armature to gain movement (usually about 4 inches of wire is adequate). Then, after mounting the relay at a convenient location under the baseboard, connect the signal lever to the relay armature extension by means of nylon thread.

Adjustment can be quickly made by sliding the thread along the heavy wire (to adjust travel) and bending the wire to set the start and stop limits.

Do not increase the armature travel to increase signal arm travel. Magnetic pull on a relay armature decreases according to the inverse square law — twice the gap requires four times the pull, whereas twice the lever length (the heavy wire) requires only double the magnetic pull. In the article on the M.M.R., you will see that the locking principle is used as a safe-working facility — once the train releases the signal relay, it cannot be operated again by the signalman alone.

POINT OPERATION

Whilst relays make very cheap and efficient point motors, there are problems associated with their use. The first is that unless complicated linkage is used between motor and point, the position of the motor is quite critical and often is obstructed by some other component.

Point blades must be free operating if they are to be relay operated.

However, the extra contacts of the relay come in very handy for frog switching, etc. As in the case of signals, a 3" extension wire should be soldered to the armature to increase travel.

RELAY FLASHER CIRCUIT

Two or three slow releasing relays can be used in a circuit to give a pulse about once every second for operating crossing lamps, advertising signs, etc., on a layout. The circuit for two relays is shown in Figure 9.

When power is switched on, A operates, then A1 operates B. B1 opens the circuit to A, which releases slowly. When A releases, A1 releases B slowly, which then operates A and so on. The flashing rate will vary accord ing to —

(a) Size of copper slug on relays;
(b) Voltage of supply;
(c) Spring tension;
(d) Coil resistance;
(e) Armature residual screw adjustment

so you can see that it is a matter of trial and error.

CIRCUIT BREAKER RELAY

By winding a couple of layers of fairly heavy wire (about 16 to 20 gauge) on top of an existing relay coil, a relay can be made into a magnetic cut out.

Figure 10 shows the circuit arrangement.

This works something like the magnetic cutouts (the red buttons on controllers) that we are familiar with.

When current to the track is excessive, the relay operates on the low (heavy wire) winding. When operated, it locks on the high winding and lights a warning lamp. When the fault has been located, it restores to normal, when the controller is restored or when the train is removed.

In the meantime, full current to the track has been broken by contact unit CB1. This relay needs a little special adjustment to ensure that it does not operate on normal train circuits, but does operate on excessive currents.

INTERLOCKING

Relays are usually essential in electrical interlocking circuits. For example, the setting of a pair of points may limit the operation of several signals, some of which may be operated with the points set that way, and some which may not.

If a single contact attached to the points can be made to operate a relay, then contact

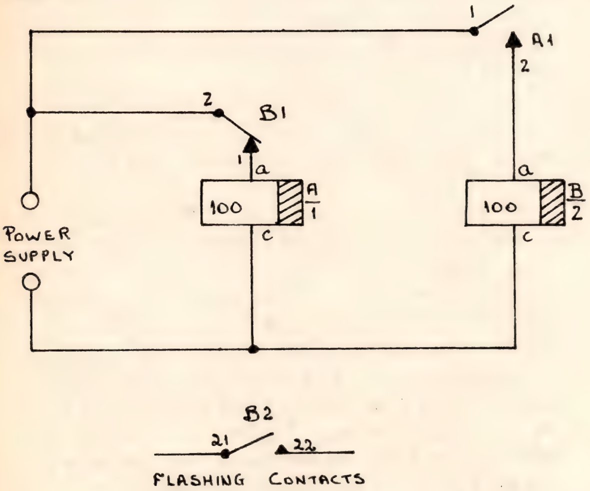


Fig. 9 FLASHER CIRCUIT

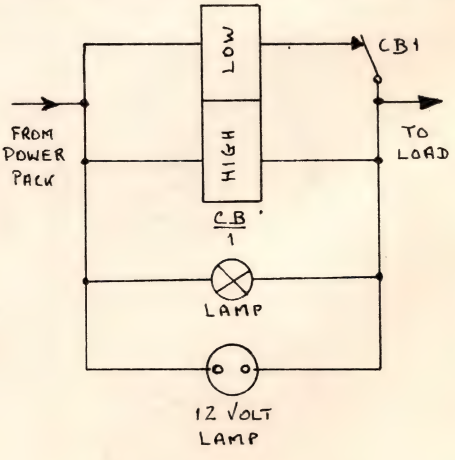


Fig. 10. RELAY USED AS A CIRCUIT BREAKER.

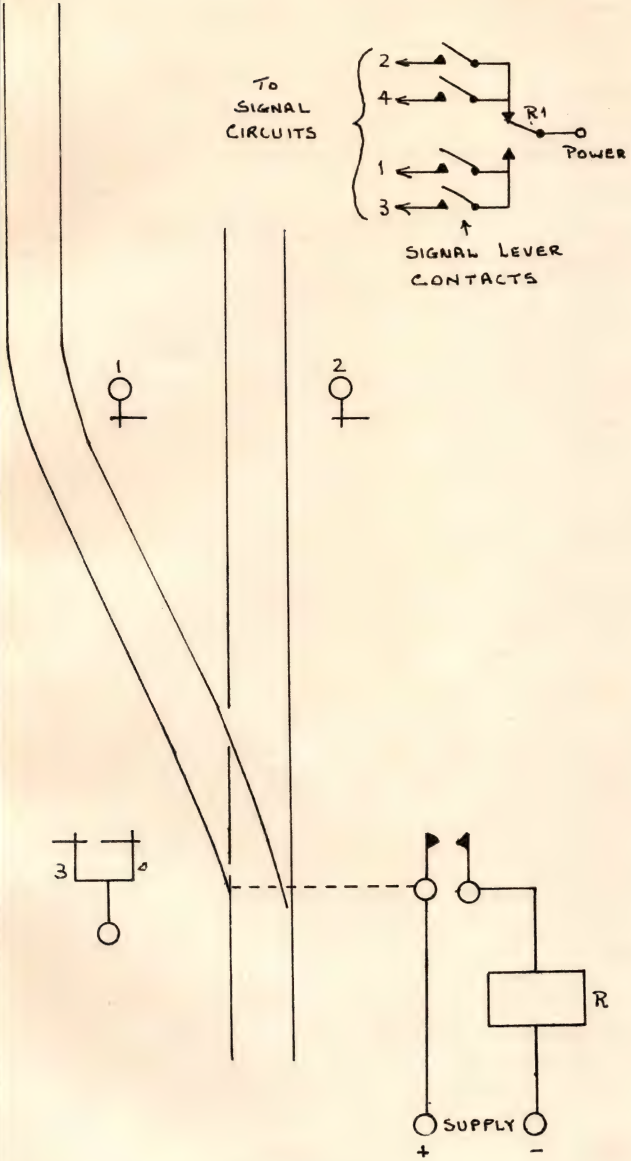
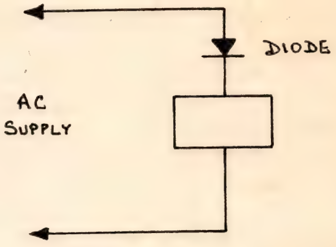
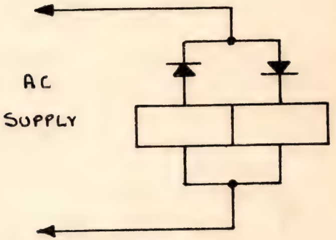


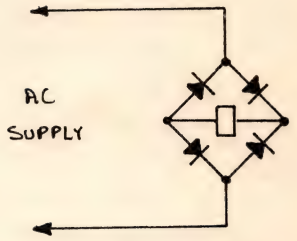
Fig. 11 Relay R operated by Points
Controls Power to 4
Associated Signal Circuits



(a) Half Wave



(b) Full Wave



(c) Alternate Full Wave

Fig. 12. A.C. Operation

units of that relay may be connected in each of several signal circuits.

Likewise, relays operated by signals can control the circuits of other signals, and even points, to prevent points being operated whilst an associated signal is off.

Figure 11 shows a very simple interlocking circuit which limits the operations of four signals. There is no limit to the circuitry which can be applied in interlocking circuits.

A. C. OPERATION

The great majority of relays are designed to operate on direct current, but these relays can be made to operate on alternating current by using diodes in series with the coil windings.

Figure 12 (a) shows a simple circuit using one diode with an ordinary single winding coil assembly. This is adequate for most jobs, but does not use every second half cycle of the A.C.

Figure 12 (b) shows two diodes used on a two winding relay, which uses both half cycles of A.C.

Figure 12 (c) is the best of the three, as it uses the full single winding on both half cycles, but needs four diodes.

The diodes, of course, are usually more expensive than the relay.

DIRECTIONAL RELAYS

The circuit in Figure 12 (a) may also be used for a directional circuit — one which operates to D.C. when connected one way, but not when the D.C. is reversed. For example, this circuit, if connected across the track would determine which way a train would run, and could be used to set signals facing one way, whilst setting signals in the opposite direction to "off".

SLAVE RELAYS

Quite often, a relay requires a heavy spring load to do many jobs, but the current flowing in the coil is insufficient to operate the relay with that load.

In this case, two relays are used. The first has only one contact, whose sole function is to operate the second.

The second relay is therefore said to be a "slave" of the first.

Figure 13 shows two relays used in this manner in a simple track circuit. Relay A is so slightly loaded with springs that it will remain operated to current which will not turn the train motor (the controller is arranged to not quite switch off). Relay A only operates B, which in turn does all of the work.

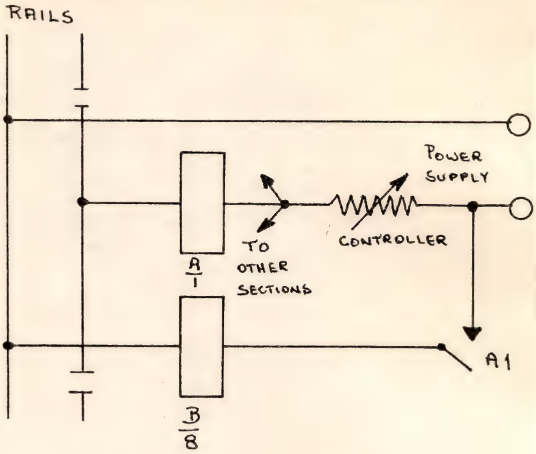


FIG. 13. SLAVE RELAY

A OPERATES B ONLY

B DOES 8 JOBS.

* * *

WHAT'S NEW?

Member Dennis Hodges, temporarily residing in Australia, gives information on two publications available from U.K.

The first, "Nonsuch Notebook of Railways and Models" is privately published and distributed by Denys H. Fletcher, 24 Tylers Acre Avenue, Constophine, Edinburgh 12, Scotland. Subscription is $1.60 for a year's issues (6), including postage.

The other is a magazine for 2 m.m. modellers available to members for only £2-2-0 sterling per year. It already has some Australian members. In this case, contact S. C. Hine, 44 Waverley Road, Raynor's Lane, Harrow, Middlesex, U.K.

* * *

OBITUARY

It is with deep regret we advise the death of Ron White of Bena Road, Korumburra and a keen member of The South Gippsland Branch. Our sympathy goes to his wife and baby son.

Wood For Works And Ways

Second of a series by Maurie McKinnon

Having settled on a track plan and found enough space around the house to accommodate the plan, next comes the problem of getting started on the actual construction of he layout.

For the chaps who have had some experience in wielding the hammer and saw, getting started will probably amount to just that — getting started. However, for those who have had little or no experience in this field, he actual task of getting started might be approached with some trepidation.

To allay some of this apprehension, let's have a quick run-down on materials which may or may not be advisedly used on the construction of bench work.

Some of the following notes might appear to be long and tedious, but they are written especially for the uninitiated. A little knowledge of the subject will more than likely save the beginner from spending money and time on unsuitable materials; time and money which are better spent on other phases of the hobby. Meanwhile, the "wood wizards" can pass on to the next article.

MATERIALS

First of all, let's deal with the subject of suitable materials for bench work. I guess we can accept the fact that the best material to use is wood or timber of some kind, as it is ight in weight, easy to work with simple tools, can be readily obtained and is comparatively inexpensive.

So let's take a run through the types and grades of timber generally available which are suitable for our purposes.

Before we do this, here are a few hints for the uninitiated on the subject of timber purchases.

Timber, whether sawn or dressed, is usually sold by the lineal foot or per 100 lineal feet, the price per foot of up to the first 50 feet beng approximately 10% higher than the 100 foot rate.

Cross-sectional sizes used are the nominal sawn sizes and these lose approximately ¼" when dressed, i.e. 2" x 1" is dressed to 1¾" x ¾", 3" x 2 is dressed to 2¾" x 1¾", etc.

Sheet materials, such as hardboard, ply and particle board are usually bought by the sheet. Where cut sizes are available, prices are approximately 10% higher. A possible exception would be particle board, which comes in a wide variety of sizes and is often cut to small sizes at no extra charge.

USED TIMBER

There is always a big temptation to start off by buying secondhand timber on the assumption that money saved on the purchase of timber can be invested in other model railway equipment.

This assumption can be misleading. Firstly, it is doubtful whether secondhand timber is lower in cost than new timber, when one considers that the small saving in initial cost can easily be eaten up the wastage factor with second-hand timber. Secondly, the use of used timber can be a considerable time waster, especially when it is necessary to dismantle sections (this applies to cases, etc.), remove metal fastenings and, perhaps, clean the timber before use. Thirdly, the use of unstable timber can lead to badly aligned trackwork in the finished layout.

As most packing cases are made for the purpose of protecting their contents in transit then to be expendable, obviously the timber used in their manufacture does not necessarily have to be of good quality or be particularly stable.

Certain case timbers, including quite a few in the pinus group, will remain flat while nailed up in case form, or even when broken up and stacked flat, but once restrictions are removed, they will quickly distort. For this reason, it is advisable that case timbers be treated with caution unless one has had experience in selecting timber.

To sum up on the subject of secondhand and case timbers, the purchase of same for benchwork (other than for legs, track-risers and scenery) is not recommended.

NEW TIMBERS

Let's run through a short list of species of new timber readily available. Lowest on the list, price-wise, is **Ordinary Builder's Hard Wood** (known as "OB" Hardwood). This is usually a low-grade, unseasoned hardwood, in a rough-sawn state which until it dries out, can be unstable. When dry it can be extremely hard to work and to nail, so that it is not recommended for benchwork, except for legs and as underframing.

Pinus Radiata, grown in Australia, is the lowest-priced of the dressed timbers and is readily available in most required sizes. It is soft, easy to work and to nail, but unstable if not securely fastened at close intervals. Knots in radiata are "tight", i.e. they do not readily fall out, but care must be taken to select a good grade, as the poorer grades have large knots.

When cut into small sizes as used for benchwork, timber with large knots is liable to break very easily. Pinus radiata is suitable for those sections of benchwork where it is possible to be fixed securely at close intervals, but it is not suitable for use as trackbase.

Oregon Pine is imported in large "flitches" (pieces of sawn timber up to 18" x 6" and up to 40' long) from the north-west States of America. It is usually machined to smaller sizes in Australia in an "air-dried" state, so it should be stacked out to dry for a short period after being machined and before being used for benchwork. Once dry, it is quite stable.

Oregon comes in several grades, the best grade being "select", although the lower grade, "S.E.M.", is quite suitable for most benchwork purposes. Where long lengths are required in the smaller cross-sectional sizes, it is advisable to use "select" grade, as the lower grades will have large knots which are likely to break or to fall out.

Not as soft as radiata, oregon works readily but tends to split if nailed too close to an end. It is available in all sizes needed for our purposes, although it is higher in price than radiata, "select" being the highest price and lower grades cheaper. S.E.M. is approximately the same price as kiln-dried hardwood.

Kiln-dried Hardwood, known as "K.D.H.W.", is a broad term which covers a large group of Australian hardwoods grown in the Eastern States. It can vary from mild to hard in density, the milder varieties being pale in color, the harder varieties usually being various shades of brown. The milder variety is easy to work and to nail, is quite stable and is especially recommended for all types of benchwork. It comes in all sizes required for our purposes in lengths up to 20' and is free of knots.

Another very suitable timber readily available is **Meranti,** a mild, stable, pink-colored timber costing approximately the same as K.D.H.W. and S.E.M. oregon. Meranti is not unlike Queensland Maple in appearance and texture. Unlike maple, it is readily available in most States, maple being readily available in Queensland only. Both timbers are quite good for all benchwork.

One timber readily available but not recommended for use anywhere at all in benchwork is **Ramin,** a pale, lemon-colored timber. It is soft and easy to work and might appear to be admirable for our purposes, but it is most unstable and very susceptible to fungal attack should it become wet.

There are other timbers available, some suitable and some unsuitable for benchwork, but the above list covers most of the suitable varieties readily available. To add further to this list, I feel, would tend only to confuse the beginner.

SHEETS AND BOARDS

Manufactured boards or sheeting come in a few forms and quite a few thicknesses. One board often used by beginners as the basis of model railways, much to their disappointment, is **hardboard.** It is not at all suitable for this purpose as it absorbs atmospheric moisture which causes is to distort unless supported at very close centres. In addition, it is too hard to take small nails easily and will not hold them securely. Hardboard is definitely not for **us.**

Plywood of $\frac{1}{4}$" thickness or more, although not liable to distort as does hardboard, is not really suitable as a basis for a model railway. Apart from the texture of the timber used in the construction of the plywood, the glue lines are quite difficult to pierce with small nails: the thicker the sheet, the more the glue lines: the more glue lines, the harder it is to nail.

In addition, thin sheets do not hold small nails securely. In the hands of an experienced oodworker, plywood can be an excellent aterial with which to construct benchwork.

As mentioned in my previous article, I know f a large "S" gauge hoist-up layout, built lmost entirely of ¼" plywood. However, it not recommended as a beginner's material. here being more easily managed and cheapr materials available. In any case, plywood is ot really suitable as a trackbase, being too ard.

The best universal "board" for model railvay purposes is **particle board,** which, like ardboard, is a "manufactured" board. So that he properties of the particle board might be ully appreciated, perhaps a short description f the manufacturing process would help.

Pine billets, after being de-barked, are choped up into flakes which are then dried. The lakes are then spray-coated with resin, dried gain, then stored in hoppers. From the hopers, the flakes are seived and shaken out n to large metal platens; firstly a thin layer f fine flakes, followed by a thick layer of oarse flakes then another thin layer of fine akes, until a blanket is built up to approximtely four times the final thickness of the oard.

This blanket is then pressed in a heated ress, which melts the resin coatings on the akes and bonds them, until a board is prouced slightly over-size in thickness. The oard is then set aside for several days to cure, vhen it is fine-sanded on both faces to the nal thickness. End result is an excellent oard: strong, stable, of constant thickness, vhich nails, saws and glues easily and does ot split. It takes screws well through the ace; screws used on the edge grain (actually etween the flakes) need to be longer than sual and dipped in glue before being screwd home.

Due to its method of manufacture, particle oard is almost impervious to atmospheric oisture, so is most stable even in the thinner izes.

Boards are produced in sizes from 12′ x 6′ lown to 12" widths, in thicknesses from ⅜" o ¾", can be cut in any direction regardless f grain and off-cuts can be glued together o "remake" boards.

With all of these advantages, particle board an safely lay claim to being the answer to he model railway enthusiast's dream.

It is to be hoped that the above notes will be of assistance to beginners, aiding them in the selection of suitable materials for their benchwork. Keeping these notes in mind, a browse through the stocks of the local timber merchant should disclose the species readily available, the prices of some in sizes up to 4" in width, together with other information.

The final article in this series will contain details of sizes of timber, etc., for the various requirements of benchwork, together with suggested joints and methods of construction.

Overall, the three articles should be a decided help in solving many of the beginner's benchwork problems.

BRITAIN IS NOT FAR BEHIND

The spotlight has been so much on the Japanese Tokaido speed record holder over the last couple of years, that one is inclined to overlook what is happening in Britain.

The London and North-West England routes which were converted to the 25 kilo-volt system and inaugurated in April, 1966, have reallv been paying off.

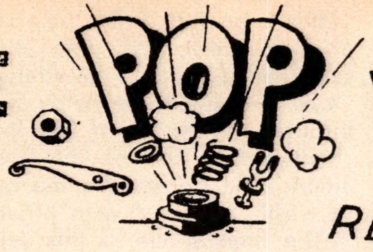
This is one of the most densely occupied lines in the world, connecting London with both Liverpool and Manchester. No less than eighteen express trains each way run daily, at average speeds of 75 m.p.h. Altogether, more than 400 trains run daily over the electrified section.

The mainstay is a fleet of AL6 3600 h.p. electric locomotives, which give exceptional performance, considering the weight limitation imposed by the restricted loading gauge. These are backed up by a fleet of AM10 four-car multiple unit trains. These 200 vehicles are all equipped with disc brakes.

Signalling on the line is by four aspect colour light signals, and each signal box can handle 5 route miles of railway.

In the 20-week period following inauguration, overall passenger traffic increased by 50 per cent on the equivalent 1965 period. London and Coventry traffic increased by 100 per cent.

British Railways are now looking at the possibility of extending the main-line electrification to Glasgow



THE POP VALVE! FOR READER'S LETTERS

TO THE EDITOR, AMRA

Dear Sir,

With reference to Mr. Jack Parker's letter in the Christmas issue of Journal — by writing this letter he has shown himself to be an extremely rare person.

It would appear that Mr. Parker was never a child himself, and hence he was never interested in Model Railways as a boy. A person doesn't just suddenly become interested — it must be built up from his first "O" gauge clockwork train set at 4 (?) years of age.

I am 15 years of age and have just finished the first stage of a large layout, something I could NEVER have built without my father's assistance. Father and son DID get together and did a mighty good job.

Mr. Parker wishes to "popularise our hobby and extend the fraternity of modellers"; from whence does he intend to get the future knowledgeable men needed to support the club? We have a number of men in A.M.R.A. now who are extremely knowledgeable and who are always glad to help, BUT these men will not live forever; there must be others to carry on and cultivate the hobby, today's junior members.

Those young boys who are now in the Association's N.S.W. Branch (at most six) are very interested and very careful with other members' equipment.

As for public opinion of the hobby, much of this has been changed over the last year or two, so that there are not many now who consider us "childish".

Finally, there are no "clumsy brats" in A.M.R.A., N.S.W. Branch.

Yours faithfully,
PETER LEMON.

Competitions

LINESIDE STRUCTURE

Any structure which may be seen beside or on any Australian railway, such as a water tower, coaling stage, footbridge, signal gantry, platform, turntable, house, shop, factory, points, crossing, etc.

A photo should accompany each entry, which will also be an entry in the Journal photo competition.

JUDGING will be on —

(a) Faithfulness of reproduction, or quality of design if freelance.
(b) Standard of workmanship and attention to detail.
(c) Paintwork and finish.

ENTRIES to the Federal Secretary, A.M.R.A., c/- Bena Railway Station, Victoria.

AWARD: The Candemah Valley Cup. Also minor prize to runner-up.

CLOSING DATE: September 1, 1967.

LOCO

Any loco outline, past or present, steam, diesel or electric, any scale. Model to be scratch built except for wheels, motor and small fittings.

ENTRIES to the Federal Secretary, A.M.R.A., c/- Bena Railway Station, Victoria.

AWARD: The Tim Dunlop Cup for one year, then an inscribed replica.

CLOSING DATE: January 31, 1968.

ROLLING STOCK

Any Australian rolling stock. Model to be scratch built except for wheels, couplings and small fittings. Any scale.

ENTRIES to the Federal Secretary, A.M.R.A., c/- Bena Railway Station, Victoria.

AWARD: Trophy donated by N.S.W. Branch.

CLOSING DATE: January 31, 1968.

UNSOLDERING

Most of us can look back a long way to hen we learned the basic essentials for good ldering — the proper metals — properly eaned — adequately heated — correct flux - tinned soldering iron; but many modellers not appreciate the requirements for un-ldering.

We use a lot of second-hand key switches, lays, etc., which need this pre-treatment efore new wiring.

Here's the method —

Mount the device firmly in a vice or on a firmly held panel or other support. The tags should be horizontal to avoid solder running to the root of the tags.

. Use a well-tinned iron and **keep it well tinned.** With all the dust and dirt associated with old wires, it will quickly tarnish.

. Grip the wire to be removed about ½" to 1" from the solder point with a pair of long-nosed pliers held in the right hand.

. Hold the tinned face of the soldering iron under the solder tag, with as large a face as possible in contact with it.

5. Remove the iron, then the wire as soon as the solder melts. Don't keep the iron in contact or you will affect the insulation between springs.
6. Tap the iron on a block of wood to remove the excess solder.
7. Apply the iron again to the tag if necessary to remove excess solder.

A well-tinned iron will "suck" hot solder from a tag.

CAUTION. A cheap pair of plastic goggles is good insurance against solder in the eye.

FOR SALE:

"O' gauge Bassett Lowke 4-4-0: (unused) 3-rail $30. Also 2 yards "0" gauge brass track, 36 sleepers per yard, 19, 4ft radius curves (16 to circle) 1 RH 4ft radius turnout, 1 RH parallel point 1 facing crossover, 4 point levers and material for construction of about 15 additional track. Third rail or stud contact not yet added to above. Price for track, etc., as apart from loco $30.

Lloyd Morcom, 1 Beach Road Toora, Vic

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AND
DO YOU
WANT TO
SAVE MONEY?

Any insurance you take out with

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benefits A.M.R.A. and allows you a rebate of 5 cents in each dollar premium against your next sub. Be wise . . . insure and save money, too.

FURTHER DETAILS FROM THE FEDERAL SECRETARY

AUSTRALIAN MODEL CRAFT CO.

ALBURY N.S.W.

Model Railway Specialists

NOTHING IN STOCK WHICH IS NOT FOR RAILWAY MODELLER

1967 THE INFORMATION YEAR:

We pledged ourselves to giving over 1967 in our publicity services t the greater information of Railway Modellers. This means, of course also the quicker dissemination of news.

As a first positive move in this direction, we have revived a news sheet, under the name of "Model Railway Newsletter" (the original of which, old-timers will remember, first saw the light of day in 1951 and continued until import restrictions made it practically useless).

This Newsletter is not intended to be flash, but its purpose is to inform in more detail and more often than is possible through this or any other magazines. It is a one-page affair — is priced at 1 cent — and is issued on Thursdays, but not necessarily every Thursday. We don't want to tie our hands to prevent us doing other important things as they arise.

At the date of this letter we've just finished No. 3 of this new series of Newsletters, and it contains information on the fitting of Romford Driving Wheels, and about 1967 programs for Peco and Rivarossi.

How Do You Get It?

Copies are available principally through your regular suburban or country hobby shop for sure, and we anticipate that the inner city shops will get copies for you, if you give them a regular order.

Because of its price, it would be necessary to accumulate five copies if it is to be posted. Say five issues plus post plus envelope — 10c.

Modellers in the back of beyond and deep in the "mulga' whom we supply direct will get some in their parcels. The "Model Railway Newsletter" isn't anything much, but it will give information and frequently. The one cent is very nominal, and is designed principally to prevent taking sheafs away to light the fire.

Peco:

A lot of exciting news this year. "O" gaugers are going to hold dances of high glee. A scale track in "O" gauge - nickel silver rail - flexible that will accept "O Gauge House" wheels?? It's almost unbelievable! Wow! A Double Slip in Peco HO/OO trackwork coming up? Yes that's right! New wonderful wagon kits and vans? Sure. "N" gauge vehicles, chasses and wheels and loco body kits? Too right! Narrow gauge loco body kits and points to match crazy track? Right Again. For fuller detail get your Model Railway Newsletters regularly.

Rivarossi:

Big Boys will be here in April late (shipping permitting); a 2-10-2 loco and more E-8 G.M.s (after we said there wouldn't be) in N.P. streamliner colors and coaches to match; more gold locos and coaches; a few new rolling stock kits. More detail - you know where.

"N" Gauge:

It's quite a range even now and there are plenty of locos and rolling stock items. A full list of these is available from Titchers, Austral Modelcraft, us, Peter Pan and other "N" gauge stockists. Ask for it.